LIGHT RAILWAYS

Number 107 January 1990

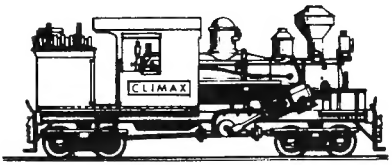
Mill Railways at Claymore and Dellerton, W.A.

Bagnall Locomotive No. 1801

ISSN 0 727 8101

The Light Railway Research Society of Australia Inc.

Registered by Australia post — publication No. VBQ1339



No. 107
Vol. XXVI
JANUARY 1990

ISSN 0 727 8101

Light Railway Research Society of Australia Inc.

PO Box 21, Surrey Hills Vic 3127

COUNCIL
President: Mike McCarthy (03) 762 5847
Secretary: Jack Stock (03) 808 6601

New South Wales Division
Address: PO Box 290, Burwood NSW 2134
President: Jeff Moonie (047) 53 6302
Secretary: Craig Wilson (02) 484 7984

Meetings
Melbourne: Second Thursday, every second month at 8.00 pm, Uniting Church Hall, Ashburn Grove, Ashburton.
Sydney: Fourth Wednesday, every second month, Woodstock Community Centre, Church Street, Burwood at 7.30 pm
Adelaide: First Thurday, every second month at 8.00 pm, 150 First Avenue, Royston Park. Contact A Lockyer (08) 296 9488 for details.

Subscriptions: $26.50 per year covering 4 issues *Light Railways*, 6 issues *Light Railway News* and information on Society activities, publications etc. Overseas $29.50 surface mail. Airmail rates on application. To Membership Officer, 3 Fairless Street, Shepparton Vic 3630. Back numbers *Light Railways* and other publications from LRRSA Sales, 21 Temple Road, Belgrave South Vic 3160.
Light Railways Editor: Bob McKillop, 10A The Bulwark, Castlecrag NSW 2068; Phone (02) 958 4516. Articles, photographs and letters welcome.

CONTENTS

Mill Railways at Claymore and Deller-ton, WA by Jeff Austin 3
History of Bagnall Loco 1801 by David Mack 12
From the Archives: Hartley Vale Shale Tramway, NSW 20
Letters 21

EDITORIAL

With articles from South and Western Australia, this issue of *Light Railways* contributes to our aim of achieving balance between states and in the range of topics covered in our journal. Jeff Austin provides a well researched article on three lesser known sawmills and their tramways in Western Australia; David Mack traces the history of the small Bagnall 0-4-0ST steam locomotive which has been restored to operating condition at the Cobdogla Irrigation Museum on the Murray River; and there is a range of letters. I trust you find this an interesting issue.

Cover: The role of light railways in the mining industry is captured in this contemporary scene at the Zinc Corporation Mine, Broken Hill. Craig Wilson photographed battery-electric locomotives Z27 and ZGM21, and a rake of ballast filled granby cars adjacent to the main shaft on 20 November 1989.

MILL RAILWAYS AT CLAYMORE AND DELLERTON, WESTERN AUSTRALIA

by Jeff Austin

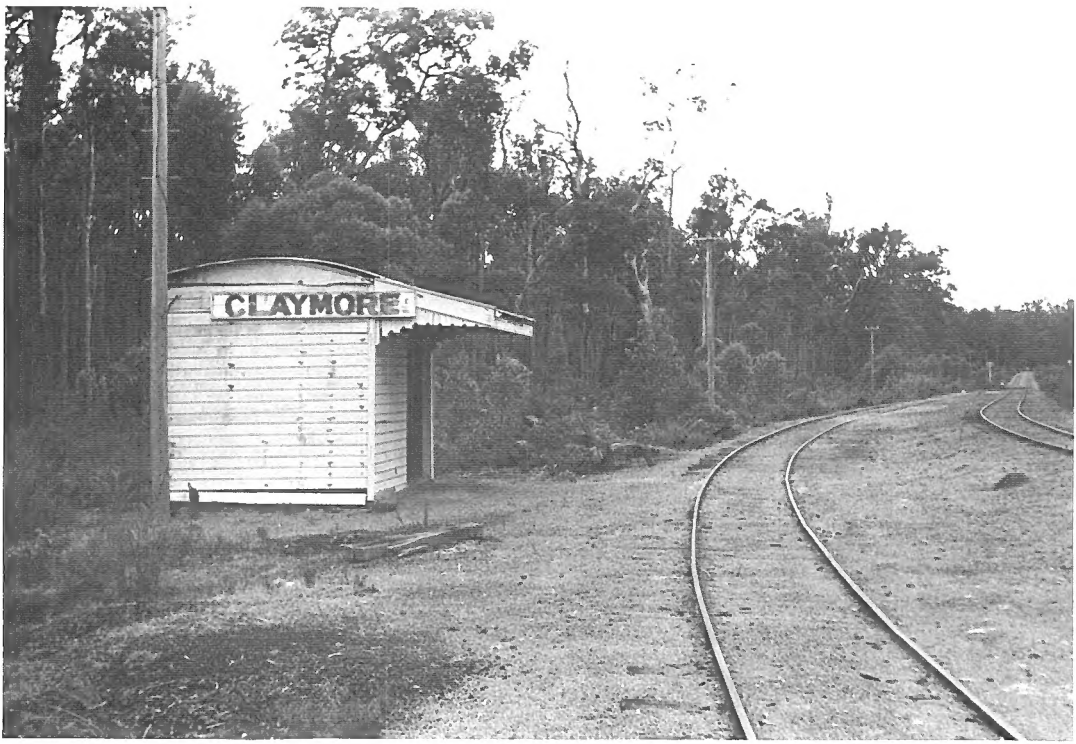
Introduction

The Western Australian Government Railways (WAGR) line from Wonnerup to Nannup in the south west of the state has long been associated with the timber industry. The first few miles were laid on the formation of the first steam railway in Western Australia, that of the WA Timber Company in 1871. Running through some of the finest jarrah and tuart forests, the line brought about the development of numerous timber mills along its 38 mile (61km) length. Three of the smaller mills at Claymore and Dellerton are the subject of this history.

State Spot Mill, Claymore

The years prior to the Great War had seen a rapid expansion of the WAGR system. The Railway Construction Branch of the Public Works Department (PWD) required large quantities of jarrah sleepers to continue this work and sought, where possible, to cut sleepers from trees felled during construction. The railway from Holyoake to Dwarda had been a major source of sleepers as it passed through the magnificent jarrah country of the Hotham Valley. With the hand over of this line to the WAGR in 1913, this source of sleepers diminished. As the newly opened State Mills at Manjimup and Big Brook (Pemberton) had recently won the Trans Australia Railway contract to supply 1.4 million karri sleepers[1], a new mill to cut jarrah sleepers was required.

The site selected was near the old WAGR crossing loop at Claymore. An engineering survey was carried out and detailed plans prepared[2]. They proposed construction of the 'State Spot Mills' siding



Claymore siding on the WAGR Nannup branch in December 1972. The Swan Mills siding swung away into the forest at the left of the loop. Jeff Austin

from Claymore to the mill, a distance of 6 miles 20 ch (10km). The steepest grade was 1 in 40, with the sharpest curve only 10 chain radius. A small four-span bridge across the Ludlow River near Claymore was the only such structure required.

Work on construction of the mill and railway commenced late in 1913, with both completed by July 1914. The PWD siding was on the eastern side of the WAGR line at Claymore. The mill line ran south east from the siding to cross the Ludlow River. It then followed the north side of the river for about three miles, before turning north east for the remaining distance to the mill. The line transversed mostly gravel country, apart from some sandy sections where it crosses short swampy areas. It has an ascending grade most of the way. The cost of the railway and private siding at Claymore was 12,350[3].

Operation of the State Spot Mill railway was by hired WAGR locomotives. A list of WAGR locomotive classes and hourly hire rates were printed in the Weekly Notice in September 1914[4]. The G, O and M classes were the chief motive power on the Nannup branch and their respective rates were 4/11, 6/6 and 6/9 per hour. Wagons would have been from the WAGR or PWD (ex-WAGR).

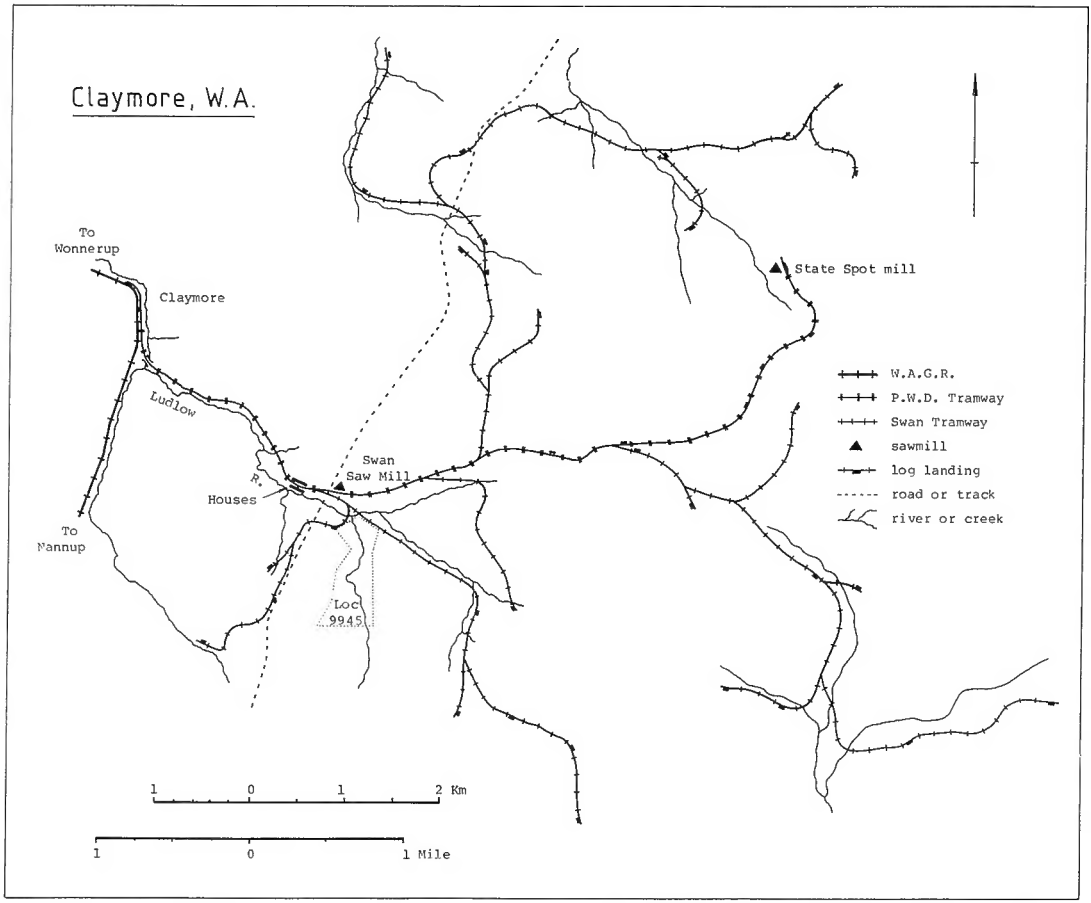
Landings along the railway were supplied with logs from the surrounding forest by horse teams. The further extension of the railway and milling activities seems to have been curtailed by the Great War and completion of the Trans Australia Railway. Hence, after only 2½ years, the mill was closed and dismantled. The PWD lease at Claymore was cancelled in February 1915[5] and the rails to the mill recovered in March 1917[6].

Swan Saw Mills, Claymore

With the return of men from World War I, the shortage of labour which had previously led to the closure of many mills was overcome. One such mill was that of Swan Saw Mills Ltd, which had closed its operations at Lowden in 1914[7]. The company was granted Sawmilling Permit 91 for 15,800 acres (6397 ha) on 22 August 1919[8] and set about relocating the Lowden mill to Claymore. The new site was adjacent to the Ludlow River and the Goodwood Road. Construction was completed in early 1920 and milling commenced under the direction of the former Lowden manager, Joseph Ryan.

The 40 hp mill operated twin saws producing up to 30 loads of sawn timber per day. Various size timber was cut as well as paving blocks for local and Eastern State markets. The fine timber gained

Swan Saw Mill Ltd, Claymore c1920s. Busselton Museum collection



Claymore a reputation for producing quality coffin boards. Firewood and packing cases were also sidelines.

The 70 employees at Claymore were mostly English and Italian migrants. The community consisted of 30-40 houses, a single men's boarding house, office, store rooms and hall. The hall, which doubled as the school and entertainment centre, has since been moved to Elgin.

The 3 ft 6 in (1067mm) steel railway from Claymore to the mill reused the old PWD formation and was completed in March 1920[9]. Initially the line only went the 2 miles (3 km) to the mill, but it was eventually extended throughout the cutting area and totalled 25 miles (40km) in length.

As Swan Sawmills was a 'satellite' of Millar's Timber & Trading Company, they leased Millar's locomotives. For construction of the line, the locomotive *NOYES* (Hudswell Clarke 483/1897) was sent up from the nearby Jarrahwood mill[10]. *NOYES*, a 2-6-2T, was an ex-Canning Jarrah Timber Company engine which had come into Millar's ownership following the mill amalgamations of 1902. It saw service at Wellington, Jarnadap, Marrinup and Jarrahwood mills. With the siding connection completed and the mill underway, *NOYES* was transferred back to Jarrahwood in mid-1921. In later years it was numbered '57' in lieu of a name and leased to the State Saw Mills from 1942 to 1950 for use at several mills. Out of use by 1950, it was stored at Yarloop until scrapped in 1958.

The second Claymore engine was the former Lowden locomotive, *JH SMITH* (Kitson T299/1899)[11]. This unusual outside-frame 2-6-2T&T was also an ex-Canning Jarrah Timber Coy engine — like *NOYES*, named after a director of the CJTCo) — and had spent most of its life at Cann-

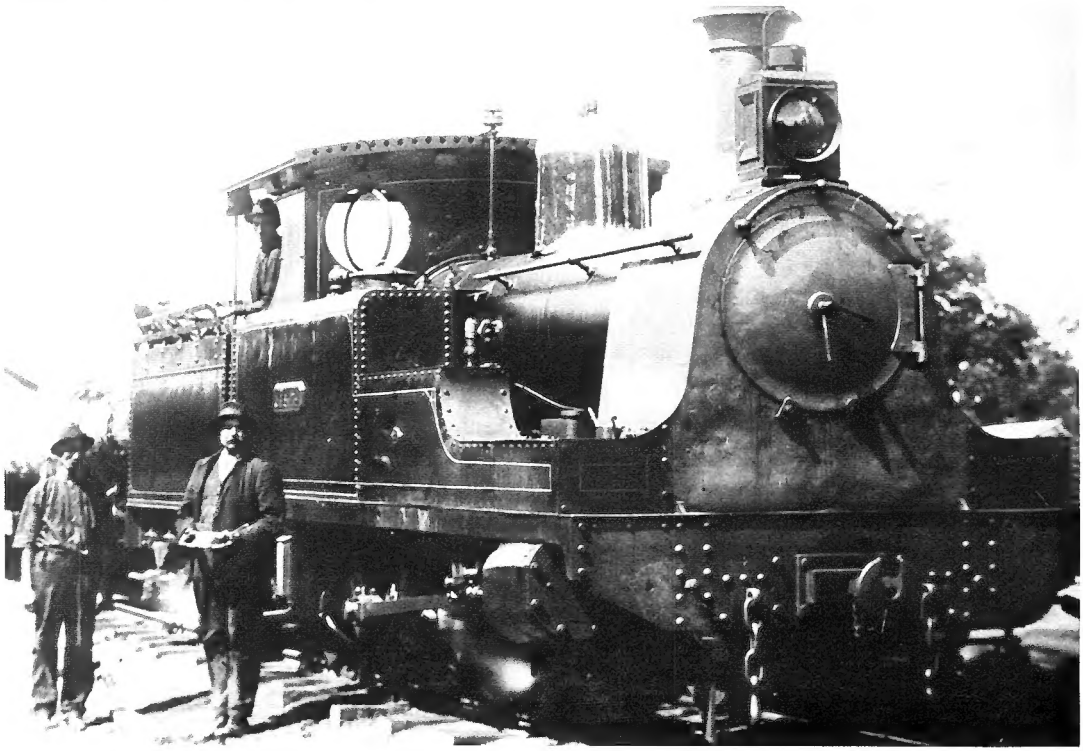
ing Mills, Wellington and Lowden prior to arriving at Claymore in early 1921.

When *NOYES* departed several months later, it was replaced by *GERALDTON* (Hudswell Clarke 382/1891)[12]. This small 0-6-0T had been purchased by the Midland Railway Company of WA for building their line from Midland Junction to Walkaway and later became a shunter. It was leased during 1896-97 to the Canning Jarrah Timber Co, before being sold to Gill McDowell by June 1901 for use at Waroona mill. This company was also absorbed into the Millar empire in 1902. *GERALDTON* saw service at several mills before arriving at Claymore. Its stay was only short and it was back at Jarrahwood mill by October 1922. As Jarrahwood was only 6 miles from Claymore and 8 miles from Dellerton, *GERALDTON* remained in this area for about 20 years. As had previously occurred at Lowden, *JH SMITH* remained at Claymore throughout the life of the mill.

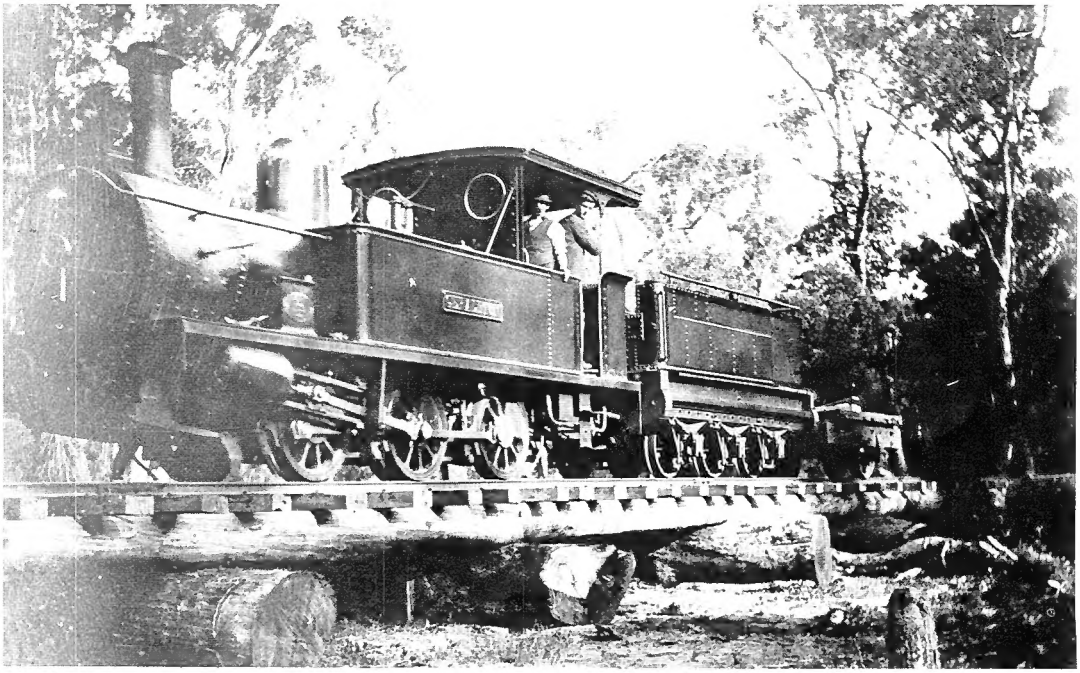
Mill Closure

In August 1929, the Swan Saw Mills permit was due to expire. Millar's tendered for the timber concession at *Campeldene*, a large area north east of the existing concession. Bunning Brothers mill at Argyle, however, tendered 1d. per load higher and gained the concession[13]. The fate of the Claymore mill was sealed when the main shaft cracked and was found to been uneconomical to repair[14]. The mill closed and employees were driven daily to the 'Sussex Timber Company' mill at Dellerton. Joseph Ryan stayed on to supervise the disposal of sawn timber, mainly through a timber yard which Millar's had opened at Busselton[15].

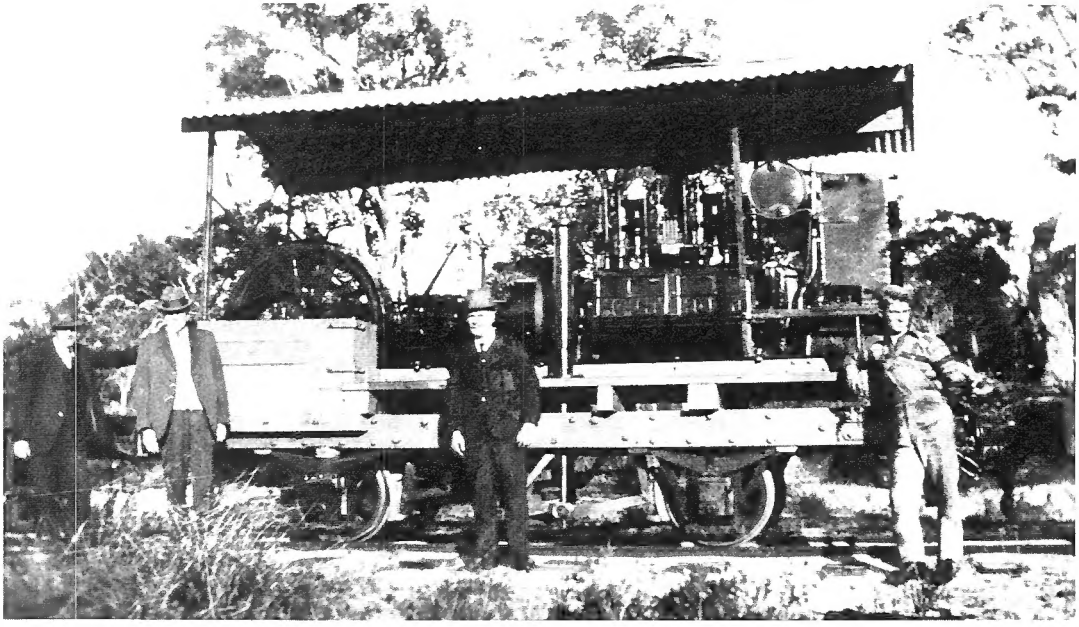
JH SMITH was also transferred to Dellerton, but with 30,000 loads of stacked timber still at Claymore mill, a locomotive was required to haul it to the WAGR siding. A small 0-4-0ST locomotive, *THE HUON*, (Andrew Barclay 959/1902) was transferred to Claymore for this task[16]. It had been purchased by Millar's from the Huon Timber Company at Geeveston, Tasmania in 1926. After having a new boiler built by the WAGR, it was sent to Dellerton in 1927. It replaced *JH SMITH* at Claymore in July 1929 and stayed there until the last timber was removed in 1939. During an overhaul at Yarloop in 1934-35, *THE HUON*



JH SMITH (Kitson T299/1899) at Barton's mill c1899-1909. Len Powell collection



GERALDTON (Hudswell Clarke 382/1891) hauling logs at Jarrahwood in 1913.
CJ Rooney courtesy Siam Studio, Manjimup



Millar's experimental diesel locomotive at Yarloop c1934. The men depicted are (L to R) Chas Craig (Ass Mill Superintendent), AC Munro (Mill Superintendent), J Bradshaw (Yarloop Works Manager) and RC Springthorpe (fitter-in-charge of project).
Len Purcell collection

was replaced by Millar's experimental diesel locomotive[17]. This unit used a Holt tractor engine mounted on a wagon frame to chain drive both axles. Built at Yarloop workshops in the 1930's, it was suited to the Claymore role but little else.

After the last of the timber had been railed out, scraps were burnt to clean up the site. The lease of the private siding at Claymore was cancelled in June 1939[18] and all remaining rails recovered. *THE HUON* returned to Yarloop, where it remained out of use until scrapped in 1958.

Sussex Timber Company, Dellerton

The Sussex Timber Company was also a 'satellite' of Millar's Timber & Trading Company. Sawmilling permit 145 was issued to businessman John Nicholson for 10,000 acres (4050 ha) on 1 September 1921[19]. Nicholson, a prominent figure of the timber industry at the time, was also the representative for another Millar's company, the Timber Corporation. When the Sussex Timber Company Ltd was incorporated on 17 October 1922, Nicholson was listed as the company solicitor[20]. 'Sussex' was the name of the local road board and nearby land district at Dellerton.

Swan mill foundations at Claymore, April 1, 1989.
Jeff Austin

The company purchased a 160 acre (65 ha) private block (Nelson Loc. 3898) in January 1923[21], and set about constructing the mill. This was completed in October 1923. The 32 hp mill powered twin and circular saws and produced up to 11½ loads per day. It was managed by Phil Ryan, who had been with Swan Saw Mills at Lowden and Claymore. He surveyed a wooden-railed tramway from the WAGR to the mill, along a watercourse known as Rocky Gully[22]. The WAGRs '173m 5ch Siding' was completed on 28 June 1924, and the mill tramway shortly after[23]. This siding was named Dellerton in October 1926, after a director of Millar's Timber & Trading Coy, Mr D Ellerton Brown.

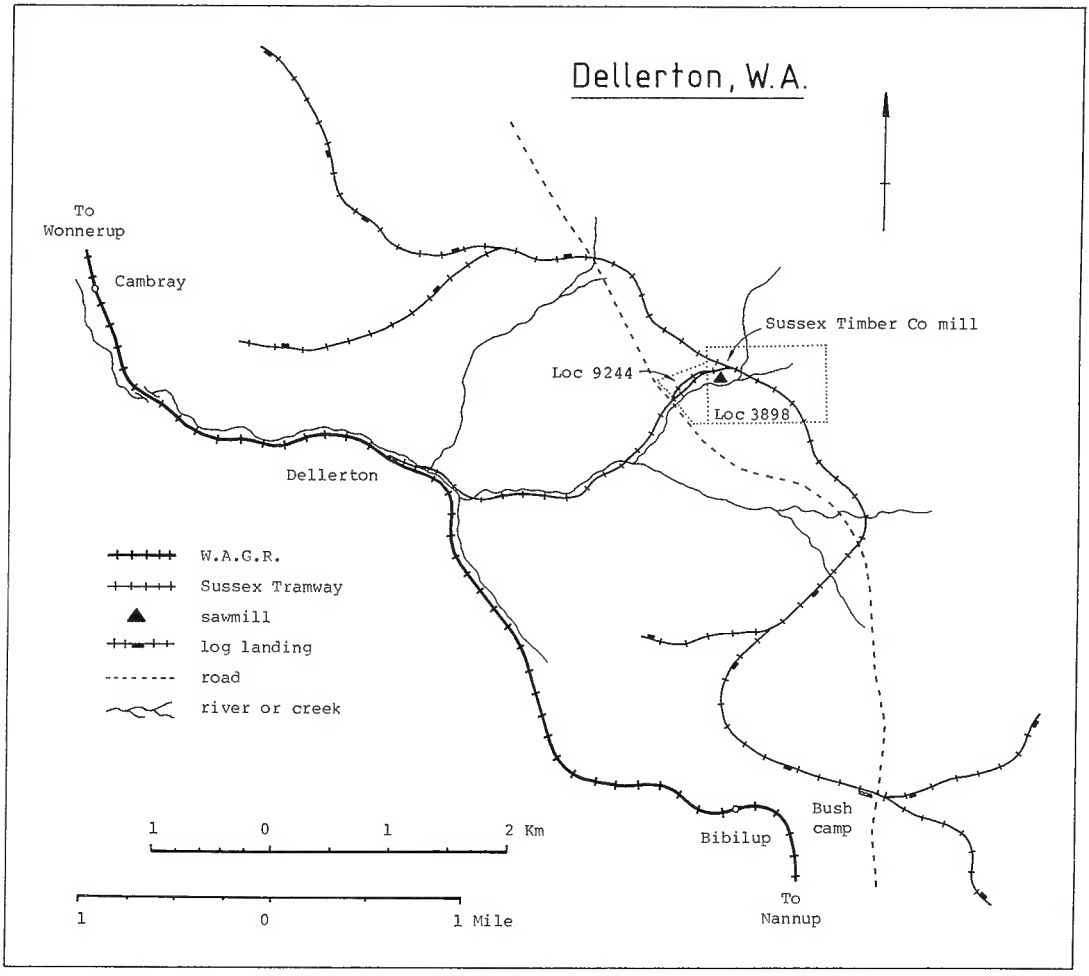
A team of horses was used to haul three wagons at a time along the 2 miles (3km) of tramway. This, however, was only an interim measure and, during 1925, the 4 in x 3 in timbers were replaced by steel rails. Phil Ryan designed and built a motor trolley to pull the wagons using an old car chassis and Overland 'B' car engine[24]. This unit appears to have been sufficient in the early days when the logs were recovered from near the mill. As lines were constructed into the forest, a locomotive was hired from Millar's. This was *THE HUON*[25] recently acquired from Tasmania. This little engine was suited to the short hauls and easy grades of the Sussex cutting areas.

The bush formations which branched north and south of the mill eventually totalled 14 miles (22km). For a time, a 'bush camp' existed where the southern formation crossed the Nannup Road (now the Vasse Highway). To provide an area for stacking sawn timber, the company purchased a 31 acre (12.5 ha) block (Nelson Loc. 9244) between Loc. 3898 and Nannup Road[26]. Bisecting this block were two lines, about 50 ft apart, where sawn timber was stacked awaiting transport to the siding.

Following the closure of Claymore and the transfer of *THE HUON* in July 1927, *JH SMITH* took over as mill engine. This was only a brief stay and, by September 1930, it was back at Yarloop. It remained there out of use, until scrapped in 1958. The replacement locomotive was the Jarrahwood engine, GERALDTON which stayed until closure of the mill.

Mill Closure

Over the years the company had increased its concession area, but by the late 1930s these had been cut out. The mill closed in 1939, when all leases and permit areas were transferred from the Sussex



Timber Co to Millar's[27]. All bush lines had been recovered by February 1941, when disposal of the stacked timber continued. In October 1942 only the private siding at Dellerton remained and the lease on this was cancelled in October 1944. The points and remaining rail were removed by the WAGR in January 1945[28]. *GERALDTON* was returned to Yarloop and leased to Bunning Bros from 1942-44 for use at Tullis mill. It then went back to Yarloop and remained out of use until scrapped in 1958.

Claymore and Dellerton Today

The site of the Swan sawmill is located at the junction of two Forestry roads, Goodwood road and Claymore road (the formation of the railway). The foundations of the mill are quite clear, with some evidence of log skids and building supports. The areas of employee's housing were located by household debris and wells.

All bush formations investigated are now Forestry tracks and no undisturbed sections were located. As a result, no landings, rails or sleepers were found. A small road bridge over the Ludlow River near Claymore is on the alignment of the old railway, but is unlikely to be the old bridge. The closed WAGR railway to Nannup is insitu, but heavily overgrown. The siding at Claymore was eliminated in April 1974[29], although the formations of the old siding are still visible.

The Sussex Timber Company mill site is now on a private property. In June 1946, Millar's sold Nelson Loc. 3898 to the Claymore and Dellerton mills accountant, Bert Shelley[30]. When his family started farming the property in 1956, the mill and some houses remained. Local farmers eventually

scrapped the mill machinery and the houses were relocated[31]. Only the foundations of the machinery and several wells remain today.

The rail formations across the paddocks are faintly visible. Most other formations are also Forestry tracks with no evidence of previous rail activity. The former company block, Nelson Loc. 9244, was revested back to State Forests in the 1950s and has been undisturbed. The old timber stacking area and railway formations are clearly discernable, with numerous sleepers remaining. Many lengths of sawn timber litter the whole area.

Dellerton siding was eliminated by the WAGR in April 1958[32]. The derailment which forced the closure of the Nannup branch in June 1984 was at the site of Dellerton siding. In order to recover the train, Westrail used 'fill' from the old Sussex Timber Company formation to rebuild the roadbed.

Acknowledgements

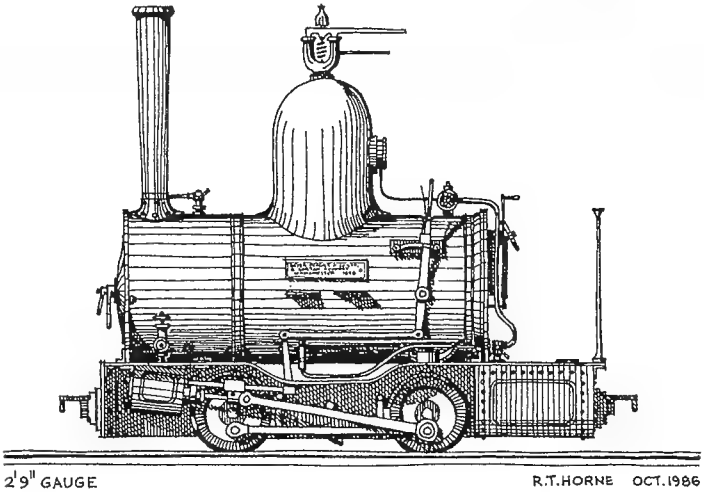
I would like to thank the following people for their assistance in preparation of this article: Len Purcell, David Whiteford, Adrian Gunzberg, Eileen Dunkley, Mrs H Lord, Mrs B Shelley and the late Phil Ryan.

References

1. PWD Annual Report 1913
2. PWD of WA Plan 17145 (November 1913)
3. PWD Annual Report 1914
4. WAGR Weekly Notice 1914
5. WAGR Weekly Notice 1917
6. WAGR Plan EEL 17039 (26.2.1917)
7. *Light Railways* No.98, p.5
8. Forest Department Annual Report 1920
9. WAGR PLAN EEL 18560 (17.10.1919)
10. WA Machinery Department Boiler Notes — A Gunzburg
11. *Ibid.*
12. *Ibid.*
13. Eileen Dunkley, Notes on Claymore and Dellerton, September 1971
14. *Ibid.*
15. *Big timber country* by Mary Calder, p.126
16. WA Machinery Department Boiler Notes — A Gunzburg
17. Len Purcell, ex Millar's, pers comm
18. WAGR Weekly Notice 1939
19. Forest Department Annual Report 1923
20. WA *Government Gazette* 1922, p.1981, 2016
21. Lands & Surveys Department Title
22. E Dunkley, *op cit;* Lands & Surveys Dept, Diagram 40751
23. WAGR Weekly Notice 1924
24. E Dunkley, *op cit*
25. WA Machinery Department Boiler Notes — A Gunzburg
26. Lands & Survey Dept Diagram 40751
27. WAGR CCE File 2262/39
28. *Ibid.*
29. WAGR Weekly Notice 1974
30. Lands & Survey Dept Title
31. Mrs B Shelley, Nannup
32. WAGR Weekly Notice 1958.

Foundations of the Sussex mill at Dellerton, April 1989. Jeff Austin

Swan mill machinery foundations at Claymore, April 1989. Jeff Austin



HISTORY OF BAGNALL LOCOMOTIVE NUMBER 1801

by David B Mack

In 1907, the locomotive construction works of WG Bagnall Ltd, of Stafford, England, built a small industrial steam locomotive in their 'Castle Engine Works'. They allotted it production number 1801. It was one of their standard designs, known as the 'Mercedes' type, fitted with a saddle tank and a cab with front and sides open.

The locomotive, as built, had the following specifications: 2ft 6in (762 mm) gauge, wheel arrangement 0-4-0, outside cylinders 6in (152 mm) diameter, stroke 9in (229 mm), driving wheels 19in (483 mm) boiler pressure 140 lbs/sq inch (965 kPa), tractive effort 1910 lbs (867 kg) wheelbase 36in, water tank 100 gallons, bunker 5 ft^3, heating surface 90 sq ft (8.36^2 m), grate area 3 sq ft (3019 cm^2) working weight 5t 5cwt (5.36 tonnes) height 8ft 3in (2515 mm) width 5ft 6in (1676 mm). It was once aptly described as a 'sturdy midget'.

Phase 1: Walhalla, Victoria, 1907-1912

On 31 August 1906, the Long Tunnel Extended Gold Mining Company of Walhalla, eastern Victoria, ordered a 2ft 6in gauge locomotive from Mussabini & Co, machinery agents and contractors of Melbourne, who in turn, lodged the order with the Bagnall Company on 19 September. The locomotive was ordered from Bagnalls because the mining company already had an identical engine (Bagnall 1729 of 1904) working at their mine since early 1905.

Bagnall 1801 was delivered ex works on 7 March 1907 and cost £390 Sterling, perhaps $20,000 or more in todays values. The price at works was £286/18/6, at wharf including packing, £341/9/9, in Melbourne, £390. The mining Company enclosed the front and sides of the cabs on both locomotives to shield the drivers from the inclement weather which is common in the high mountains at Walhalla which is situated at Latitude 38° South.

The locomotives were used over a quite extensive railway system (known as a tramway in that era as mine lines started there with horses back around 1868) in very steep mountainous country that was (fortunately for the mines, unfortunately for the mountains) heavily clothed in very tall straight gum-trees. The locomotives hauled about 17,000 tons of wood each year to the mine for furnace fuel alone, plus a large quantity for mine props, and by 1899, the mountains for quite some distance around Walhalla had been stripped bare. The increasing distance to obtain wood for the hungry furnaces, gradually went beyond the capability of horses hence the need for the first Bagnall locomotive which was ordered on 16 December 1904.

Up to 1908, the Long Tunnel Extended Gold Mining Company was profitable, but by 1909, gold production had fallen by 75% as the reef gradually ran out, and operations ceased in August 1911. On 19 and 20 July 1912, Miller & Co of Melbourne held an auction of the whole of the Long Tunnel Extended mine plant, including the two locomotives, which were purchased by the Sydney based constructional engineering firm of Stone and Siddeley Ltd.

Phase 2: Geelong, Victoria, 1912-1914

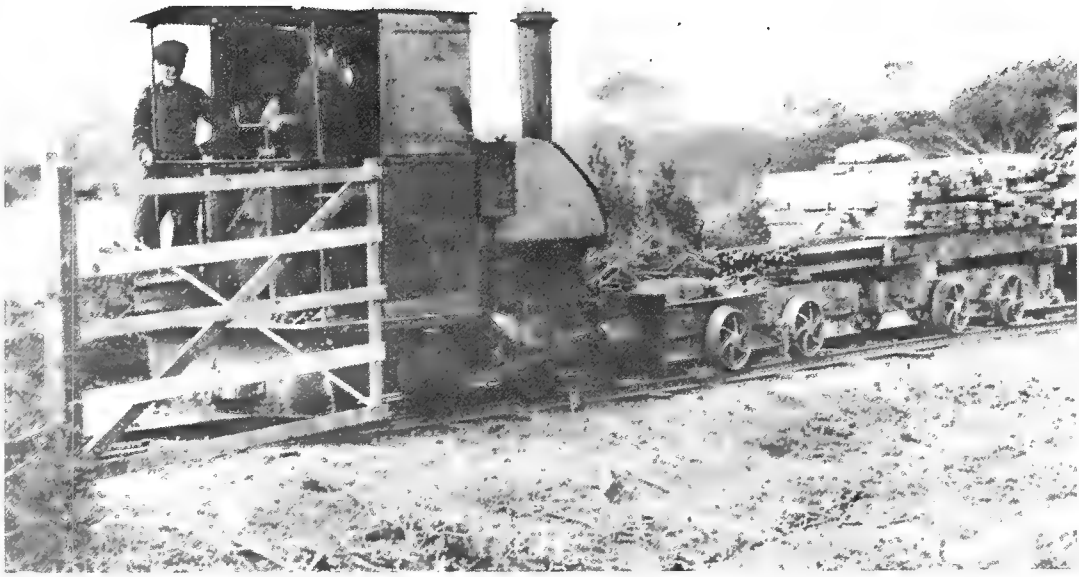
In early 1912, tenders were called by the Geelong Waterworks and Sewerage Trust for the manufacture and supply of reinforced concrete pipes and also for the laying of the pipes for an eleven mile sewer main from Geelong, to discharge into the Southern Ocean at Black Rock, between Torquay and Barwon Heads. Stone and Siddeley were carrying out concrete construction works in Geelong at the time, and won both contracts.

(Ed: see *Light Railways* No. 80 for a detailed description of this construction project).

Stone and Siddeley established a pipe factory about two miles south of Geelong, where they constructed innovative ovate shaped pipes 8ft in length, with a horizontal cross section of 3ft 3in (990 mm) and a vertical section of 4ft 3in (1295 mm) each weighing 2 tons.

The firm laid a railway along the route of the sewer with a branch line to the factory, over a total length of about twelve miles (19 km). The rails and locomotive Bagnall 1801 arrived at Geelong in late July 1912. By September 1912, construction of the 2ft 6in (762 mm) gauge line had commenced and in May 1913, one end of the line reached the coast while the other end was extended into Geelong in July 1914. The railway system was laid for the purpose of transporting the heavy pipes and other material along the trench and for transport of spoil removed from the trench.

Locomotive 1801 had been working the line until June 1913, when Stone and Siddeley's other Bagnall loco (No 1729) also commenced work. The sewer main was largely completed by January 1915 with the trench yet to be back filled. This work and the construction of an acqueduct over the Barwon



Bagnall locomotive 1801 at Geelong, on the Geelong sewer construction line in 1912.
Photo courtesy Geelong Historical Records Centre

River and the outlet into the ocean completed the contract in early 1916. The two little locomotives hauled about 40,000 tons of pipes, spoil and equipment in a little over two years of work. Around the time of completion of the sewer main (January 1915), locomotive 1801 was dispatched to Glenelg in South Australia, leaving locomotive 1729 working at Geelong during the finishing stages of the contract. This locomotive was sold in 1916 and apparently worked in New Caledonia.

Phase 3: Glenelg, South Australia 1915-1917

In 1914, the South Australian Government authorized the South Australian Harbors Board to call tenders for the construction of a reinforced concrete breakwater to be installed out to sea to protect shipping berthed at the Glenelg jetty. Stone and Siddeley Ltd were the successful tenderers on 14 August 1914 for the sum of £32,000.

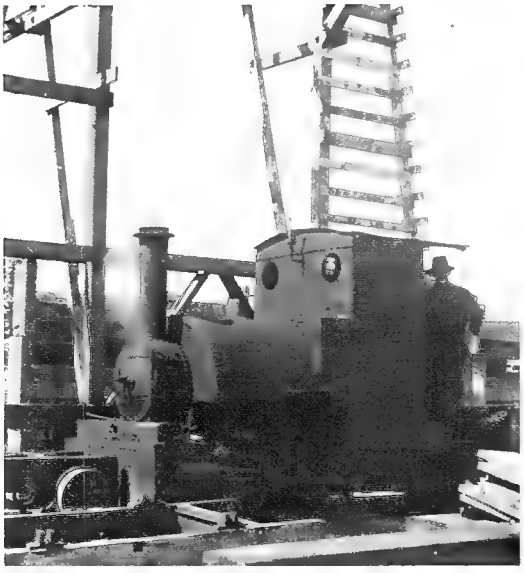
The contract was for a 1400ft (427 metres) structure about 900ft (274 m) out from the end of the 1250ft (381 m) long jetty. The structure was to be based on huge hollow concrete caissons 40ft (12.2 m) in length, to be floated out to sea, sunk in position and filled with stone, where they would support the wave barrier.

To enable the breakwater to be built, extensive works were constructed on the shore and a wooden causeway, about 3000ft (915 m) in length, including about 500ft on the shore and about 12ft above average water level, was constructed out to sea to the alignment of the proposed breakwater. A 2ft 6in gauge railway line was laid along the causeway for conveying materials and equipment out to the site and for mounting pile drivers and cranes to work along it. The caissons were to be moulded on the shore on a large platform, slipped into the sea and towed out to the site and sunk. During the summer months of early 1915, the work of moulding the caissons continued, but unfavourable autumn weather largely brought work to a standstill.

The actual installation of the caissons had not commenced, when during the night of 15 May 1915, a fierce storm gave the contractors an example of the problems that storms can bring to this exposed coast between April and October, and gave the contractors a warning of what they faced in completing the contract!

The storm greatly damaged the installations on the shore and the preparatory work and destroyed parts of the causeway, dumping into the sea, a donkey engine, a rail mounted mobile crane, a pile driver, girders, etc. Bagnall locomotive 1801, which had only recently arrived from Geelong, also suffered damage. Its exact position on the causeway when the storm struck is not known, but it could be presumed that it would be parked on the shore end of the causeway. This end of the line on the sandy beach would have been in the zone of max-

The shore end of the causeway for building the Glenelg breakwater in early 1915. It was on this end that Bagnall locomotive was parked when damaged by a storm on 15.5.1915. Public baths at centre right, with Glenelg jetty in far distance.
Photo courtesy DH Fletcher collection



Bagnall locomotive 1801 at Glenelg, on the breakwater construction causeway in 1915.
Authors collection

imum wave battering which would have undercut and washed away the lightly laid line which would have caused the loco to overturn and be submerged in sea water and sand. Damage to the plant and installations amounted to a very large sum of money which caused the contractors to abandon the contract.

The contractors and the Government representatives had lengthy discussions regarding the problems and on 21 August 1916, a new contract was awarded to Stone and Siddeley for £110,000. The new design was for a larger and stronger structure about 2380ft (726 m) in length, similar in layout to the previous plan. To prepare for the construction of this very extensive installation, the contractors had to rebuild the installations on the shore, and reconstruct the causeway. Also, the plant — locomotive, cranes, pile drivers etc — had to be serviced and repaired following the damage by sea water after the storm.

During the summer of 1916-17, locomotive 1801 came into full use on the causeway and in due time, fourteen of the caissons were placed in position, with eight of them filled. Then two pairs of the big concrete wave barrier trestles were placed on top

of the first two caissons and Glenelg residents started to see their breakwater taking shape. But, soon after these were in place, disaster struck again.

On 18 July 1917, an exceptionally fierce gale seriously damaged the contractor's plant, the causeway and the new work, including shifting some of the caissons from their correct alignment. If this was not enough, the contractors were assessing and attempting to restore some of the damage, when another big storm hit on 18 August and caused more damage!

This was quite enough for Messrs Stone and Siddeley! They refused point blank to proceed further with the contract and entered into an action at law against the South Australian Harbors Board, claiming that the specifications provided by the Government were faulty. The matter took four years to settle out of court. The Government had spent £42,223/10/- (say about $1.5 million in today's values) on the two attempts to build the breakwater and announced that it had no intention of proceeding with this or any other breakwater scheme.

On 16 December 1921, after the case was settled out of court, Stone and Siddeley sold the little Bagnall locomotive to the engineering firm, Forwood Down & Co. Ltd., Hindley Street, Adelaide. It has not been discovered where the locomotive was kept between 1917 and 1921, but it could well have been with Forwood Down pending the outcome of Stone and Siddeley's claim.

Phase 4: In Storage, Adelaide, 1917-1922

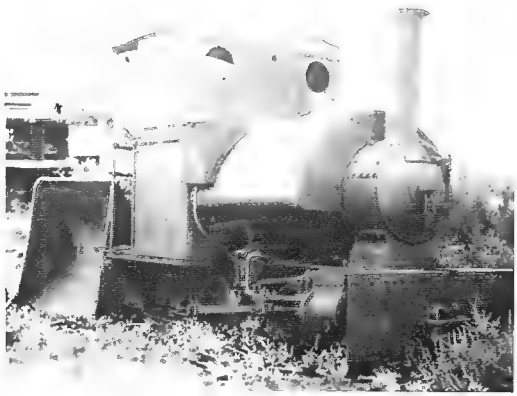
It is assumed that the Bagnall locomotive was held in safe keeping for Stone and Siddeley by Forwood Down from 1917 until 16 December 1921 when the latter firm bought it (price unknown, but it was valued at £350 in 1917). The loco remained on the books of that firm until August 1922, when they sold it. During this period, Forwood Down extensively serviced and repaired the loco to save it from the ravages of sea water and sand, and when they sold it, it was in good condition. During its overhaul, Forwood Downs mounted their name plate on the left side of the cab which read "Supplied by Forwood Down & Co. Ltd. Adelaide & Kalgoorlie". This plate was rather misleading, for it implied that they were the original suppliers.

Phase 5: Cobdogla to Loveday Railway, South Australia, 1922-1923

The Irrigation and Reclamation Works Department of the South Australian Government bought the Bagnall locomotive from Forwood Down in August 1922. This Department was the constructing and operating authority in the Government irrigation areas in South Australia, and was given the responsibility of establishing irrigation areas along the River Murray. By 1921, there had evolved a plan to irrigate between 126,500 and 145,000 acres (51,200-58,725 hectares) of land for fruit growing, upstream from Cadell to the State border, of which about 30,700 acres (12,430 ha) were to be established in and around Cobdogla. The portion that touches on the story of the Bagnall locomotive encompasses some 21,500 acres (8700 ha) of which 9,500 acres were to be planted at Loveday starting in 1921, to be followed by some 12,000 acres in the McIntosh area (north and north west of Lake Bonney). The development of Loveday had no sooner started in 1922 when the prices for dried fruits started to slump and by 1923, were disastrous and development stopped and the grandiose plans were scrapped.

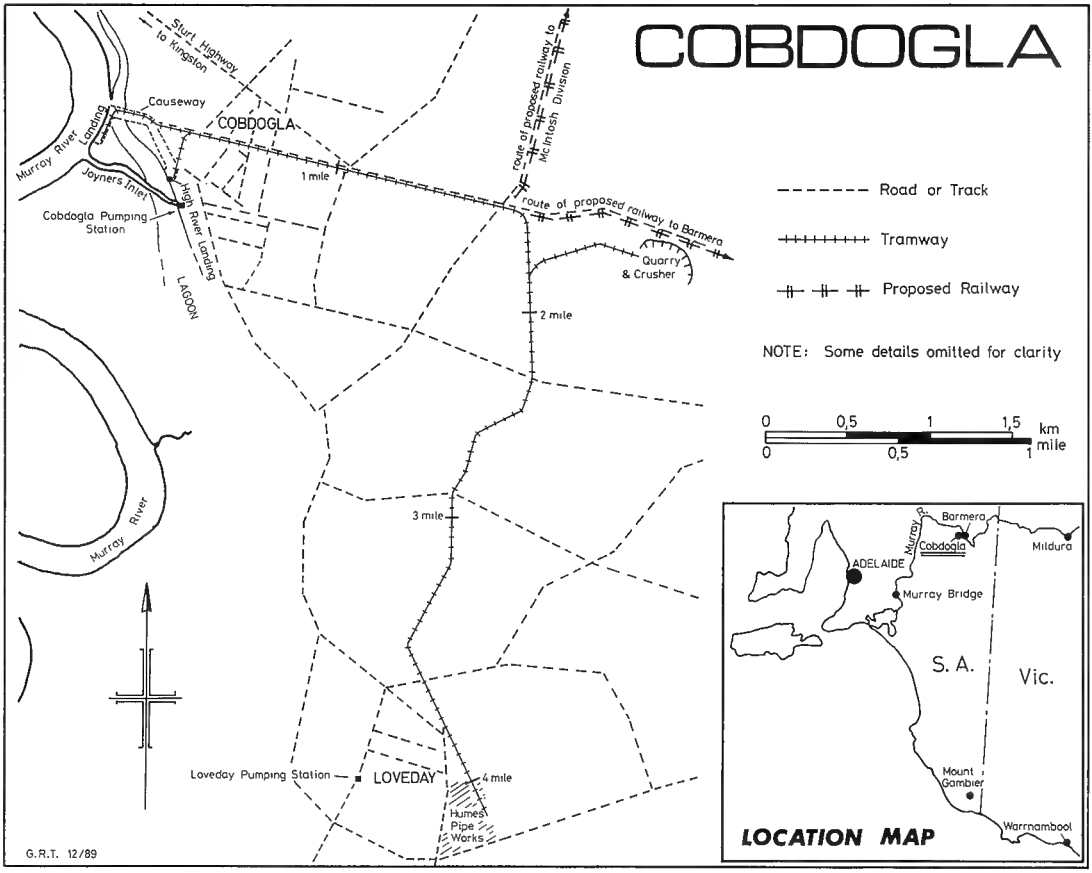
To develop Loveday, it was decided to use underground pipes (instead of the time honoured open channels — earth or concrete) and a contract was let to the Hume Pipe Company on 8 April 1921 to supply and lay reinforced concrete pipes (both main supply and internal distribution in the fruit blocks) in an area of 'not less than 9,000 acres to be completed by 31.10.1922' and that three months notice would be given to extend the contract to further areas. Humes promptly established a factory at Loveday and commenced laying pipes in early October 1921.

A large amount of plant, stores and supplies to establish and supply the factory would have to be transported upstream to Cobdogla by paddle steamer and the Department installed a 2ft (610 mm) gauge railway system between a wharf at Cobdogla and the pipe factory at Loveday, a



Bagnall locomotive 1801 stored in the Cobdogla pumping station yard.

Photo courtesy AD Lockyer



distance of about 4 miles (6 km), and a short spur line into a quarry site to obtain the limestone needed. The railway cost about £7000, including £2500 for labour and £4200 for 150 tons of 20 lb/yard rails. To operate the line, the Department first used horses hauling small trucks and skips (side tip trucks), but this soon proved to be incapable of keeping up with the requirements of the factory.

On 28 June 1921, the Department obtained an offer (which was later accepted) from Elder Smith & Co. of Adelaide to supply a 2ft gauge locomotive (then named *SPRAY*), which then was at Zeehan, Tasmania. This 0-4-2 side tank locomotive had been built by Kerr Stuart of Stoke on Trent (their number 742/1900) and cost £820/-/- f.o.b. at Burnie. The engine was at work at Loveday by early 1922 but it was found that it could not keep up with the demand. In August 1922, the Department bought (cost about £700) Bagnall locomotive 1801 and had it regauged by Forwood Down from its original 2ft 6in to suit the 2ft gauge system already in use.

The two little locomotives were hard at work day and night from September 1922. Most of the route of the line was fairly level but there was one section where the locomotives had to haul loaded trains up a quite steep short grade of 1 in 27 (about 3.7%). But in February 1923, everything came to a halt due to the depression in the dried fruit markets. The proposal to extend the contract with Humes to pipe additional areas, was mutually abandoned and the pipe works, the biggest in the southern hemisphere, closed. In that short time, it is remarkable that, at a rate of 200 tons per day, Humes made and laid about 260 miles (416 km) of 54in to 9in pipes covering more than 9,000 acres and the railway carried material (including 180,000 bags of cement and 1000 tons of wire) for the making of about 35,000 tons of concrete pipes! The little locomotives must have been hard used.

The cancellation of the future works stopped

what could have been an interesting era in both railway and local history, for it was planned to extend the railway easterly to the town of Barmera (about 2 miles) and northwards to the McIntosh area (about 4 miles), from where it was also planned to transport thousands of tons of firewood that had been cleared from that area, to the big pumping stations at Cobdogla and Loveday. If these plans had come to fruition, there is little doubt that the railway system would have been used for many more years.

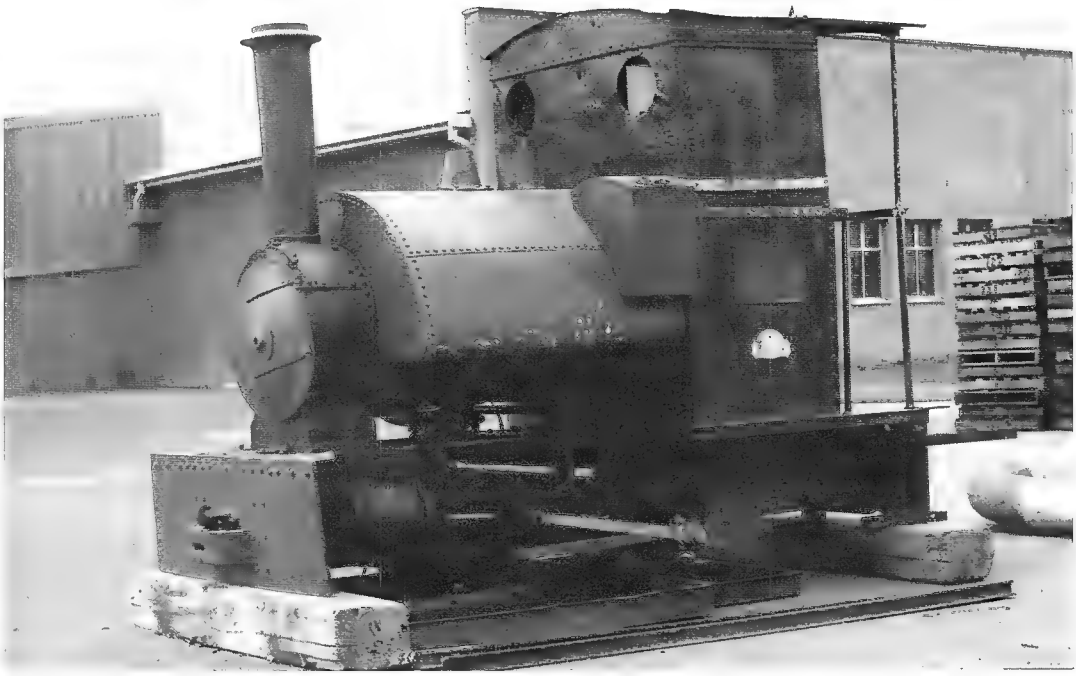
Following the failure of the scheme, the railway ceased operations. The trucks and rails were sold for a multitude of uses and the Kerr Stuart locomotive was sold in February 1924 to the State Rivers and Water Supply Commission at Redcliffs in Victoria where it operated until 1954. The Bagnall loco was retained by the Department at Cobdogla.

Phase 6: 'In Limbo', Cobdogla and Barmera, 1923-1984

It is remarkable that the Bagnall locomotive survived the ravages of time, three floods, mistreatment and neglect and escaped the attentions of scrap merchants in the sixty years during which time it stood idle at Cobdogla and Barmera.

The locomotive stood on isolated rails in the western part of the Department of Lands pumping station yard at Cobdogla until the early 1960s. However, the Department called tenders for its sale in January 1947 and it was sold to Mr George W Woolmer of Glossop for £11/-/-. Mr Woolmer was unable to shift it promptly and by arrangement with the Department, it was allowed to remain in the pumping station yard. From about late July to December 1956, it was submerged in the record flood of that year. Time went by and everyone seem to forget that it belonged to Mr Woolmer, for the Department sold the locomotive for £1/-/- in the early 1960s to Mr AE Whitmore who gave it to the Barmera District Council.

The Council placed the locomotive in a public park next to the shore of Lake Bonney, Barmera, where it suffered the ravages of children and vandals and two floods in the early 1970s. During this time, an historic information plate was attached to the left hand side of the cab which stated (among other infor-mation) that it was used by Humes "from 1922 to 1926". (Humes paid for the plate — the Department was not interested). This was misleading, for it was used only by the Irrigation and Reclamation Works Department between



Bagnall locomotive 1801 in the Ottoway depot of the Engineering and Water Supply Department on 6 June 1985. Authors collection

September 1922 and February 1923.

In 1978-1979, shortly before leaving the district, the author, a Government Superintendent at the time, tried to save the Bagnall locomotive from total ruin by privately asking the Council to allow it to be returned to the Department for preservation in the local machinery workshops and museum. The Council was aware that the loco was deteriorating badly where it was situated and not opposed in principle to the proposal, but demurred at that stage due to a fear of losing it to the district.

Phase 7: New Life, 1985-1988

In early 1984, a new phase for the locomotive commenced. Mr IR Pascoe, Manager of the Engineering and Water Supply Department, Berri, commenced negotiations with the Barmera Council in regard to preserving the locomotive. The negotiations were successful, and on 14 August 1988, the Council officially advised Mr Pascoe that they "... resolved that this locomotive be transferred to the care and control of your Department for preservation and display in the irrigation museum at Cobdogla". The future of the locomotive became assured. On 16 August, it was transported by the Department to the Loveday pumping station workshops.

On 8 January 1985, the locomotive was transported to the Ottoway depot of the Engineering and Water Supply Department, where it was stored until June 1985 when it entered the workshops and over the next two years, it was completely dismantled and totally rebuilt, using as much of the original locomotive as was suitable for renovation and faithfully making other parts and fittings identical to the original. It was turned out at the workshop in early 1988, complete with the original style of open cab and more resplendant than when first made.

It was transported to the old Cobdogla pumping station yard which had been converted into an irrigation machinery museum, both static and working. There it was placed on a small prepared track thoughtfully running through a delightful setting of native trees and shrubs and had its public debut in steam on 22 April 1988.

It is often said that an old steam locomotive can go on for ever, even if some of it has to be replaced, a portion at a time, over very many years. Certainly, it now seems possible that the famous 81 year old Bagnall locomotive number 1801 has the chance to go on for ever.

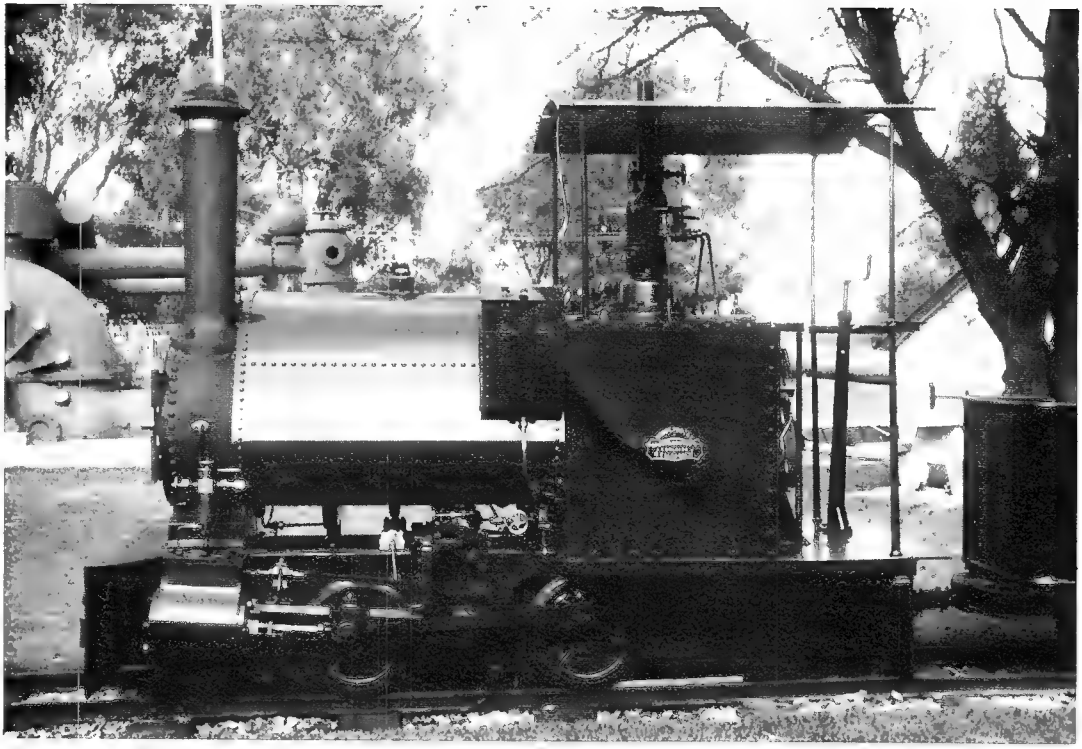
It is not possible to accurately state the distance this little engine travelled during its working life, but rough calculations indicate that 40,000 miles (64,000 km) may be a reasonable estimate, based on 12,000 miles at Walhalla, 20,000 at Geelong and 18,000 at Loveday. This is not a great distance, even for a tiny locomotive with such small wheels and would appear insignificant in comparison to bigger locomotives, many of which, during a working life of from 30 to 70 years, travelled over a million miles!

References

1. Andrews, CA 'The Glenelg breakwater construction tramway' *Light Railways* No.31 Autumn 1970.
2. Department of Lands (South Australian Government) records.
3. Engineering and Water Supply Department (South Australian Government) records Glenelg City Council, *Historic Glenelg*, 1979.
4. Houghton, N, 'The Geelong sewer tram', *Light Railways* No.80 April 1983, pp.3-11.
5. James, GF and Lee, CG *Walhalla heyday*, 1970.
6. Jeanes, WH, *Glenelg, birthplace of South Australia*, 1955.
7. Irrigation & Reclamation Works Department (SAG), Annual Reports 1910-1922.
8. Irrigation & Reclamation Works Department file IRW 1296/21.
9. Lee, J, *Glenelg historic guide and directory*, 1883.
10. Lockyer, AD, 'The Cobdogla-Loveday light railway', **ARHS Bulletin**, No.161 March 1951, p.41-43, and No.216, October 1955, p.140.
11. Mack, DB, 'History of irrigation settlement in South Australia', 1980 (unpublished).
12. Mack, DB, *Little coastal railways of the Adelaide Plains 1873-1929*, 1986.
13. Personal correspondence.
14. South Australian Harbors Board, Annual Reports 1915, 1916, 1917.
15. South Australian Parliamentary Papers.
16. *The Observer*, Adelaide.
17. *The Register*, Adelaide.
18. Woolmer, G, *The Barmera story*, 1973.

SUMMARY OF THE SIGNIFICANT DATES AND EVENTS RELATING TO BAGNALL LOCOMOTIVE 1801

14.2.1906	WG Bagnall Ltd commenced construction of locomotive 1801
31.8.1906	Long Tunnel Extended Gold Mining Company of Walhalla, Victoria, ordered a new locomotive, 2'6" gauge, from Mussabini & Company, machinery agents of Melbourne
19.9.1906	Mussabini & Co sent order to Bagnall
7.3.1907	Locomotive 1801 delivered ex works and shipped to Melbourne
May 1907	Locomotive at work at Walhalla, Victoria, hauling wood to mines
Aug 1911	Mine operations ceased at Walhalla
19.7.1912	Mine plant auction started at Walhalla and locomotive sold to Stone & Siddeley Ltd, construction engineers
July 1912	Locomotive arrived at Geelong, Victoria, and started work on construction of a sewer pipeline by Stone and Siddeley



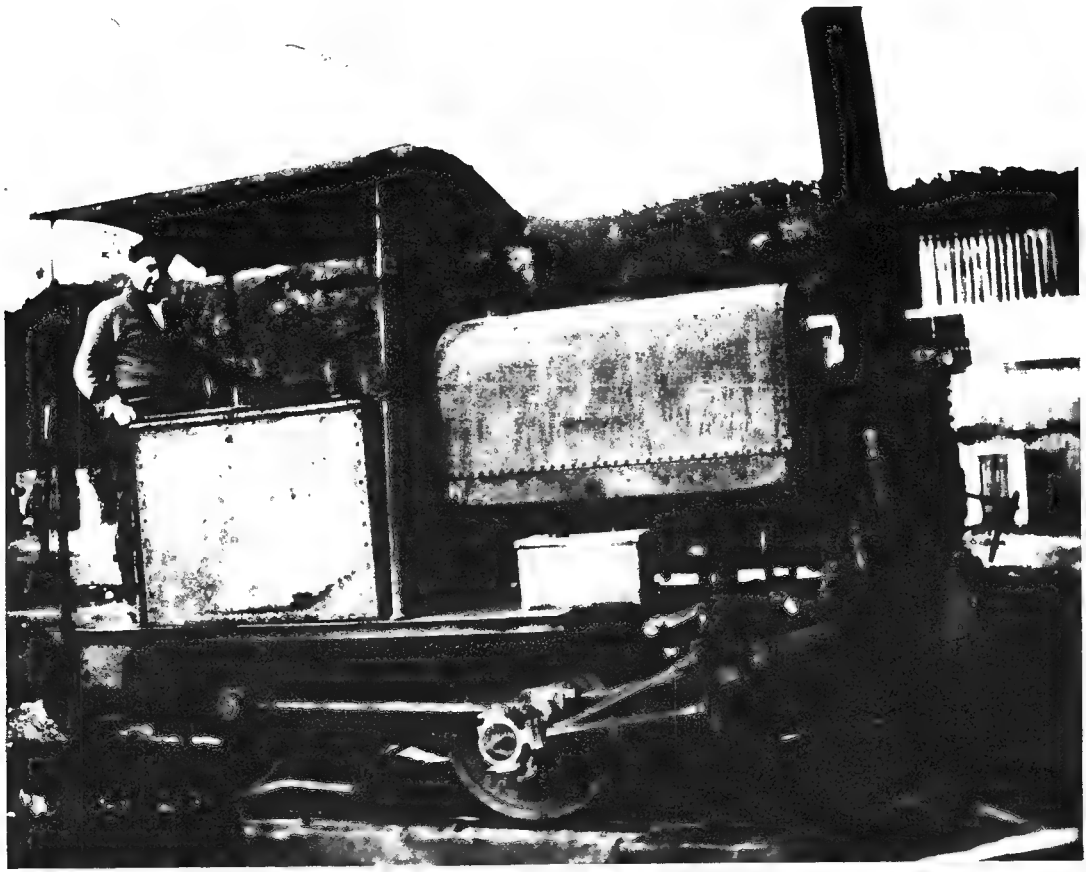
Bagnall locomotive 1801 in fully restored condition on the prepared track in the Cobdogla machinery museum park, on 2 May 1988. Authors photo

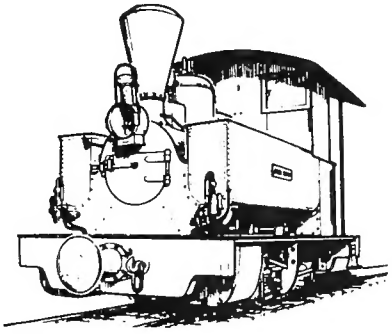
Jan 1915	Locomotive sent to Glenelg, South Australia, and started work on construction of a breakwater by Stone & Siddeley
15.5.1915	Work was suspended due to storm and loco was submerged in sea
21.8.1916	New contract — locomotive soon recommenced work on breakwater
18.7.1917	Work on breakwater abandoned due to storm. Locomotive soon sent to Forwood Down & Co, engineers, Adelaide
16.12.1921	Locomotive purchased by Forwood Down
Aug 1922	Locomotive purchased by Irrigation & Reclamation Works Dept and regauged to 24".
Sept 1922	Locomotive sent to Loveday, South Australia, and commenced work supplying material to Humes pipe works for irrigation scheme
Feb 1923	Scheme abandoned. Locomotive retired and later held in Cobdogla pumping station yard
Jan 1947	Locomotive sold to GW Woolmer, but it remained at Cobdogla
?1960	Locomotive erroneously sold again, to AE Whitmore, who gave it to Barmera Council who placed it on Lake Bonney fore shore
14.8.1984	Barmera District Council returned locomotive to the care and control of the Government
16.8.1984	Locomotive transported to Loveday irrigation pumping station
8.1.1985	Locomotive transported to Ottoway depot of the Engineering and Water Supply Department
June 1985	Locomotive entered Ottoway workshops for complete restoration
22.4.1988	Locomotive had public debut in steam at Cobdogla.

FROM THE ARCHIVES

Hartley Vale Shale Tramways, NSW

There has been some discussion in the pages of *Light Railways* over the identity of the "Morts Dock" or "Fowler" locomotive used at the Hartley Vale works area (LR.64, p.17-18; and LR.78 p.21-22). The debate has been hampered by the poor quality of the photographs previously available. Now Ms Leonie Knapman has kindly provided the photograph reproduced here of the locomotive at Hartley Vale, which she obtained during her research into the shale industry at Joadja Creek. Perhaps readers can now offer further comment on the identity of the locomotive?





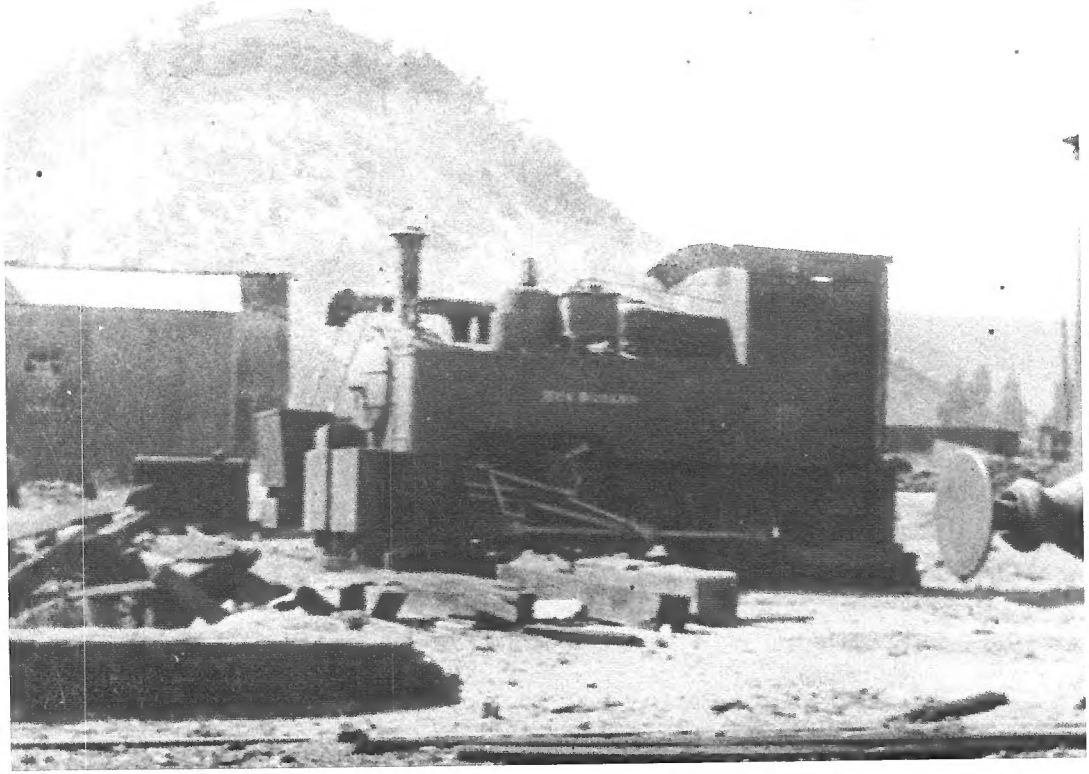
LETTERS

LOGGING RAILWAYS OF THE DORRIGO PLATEAU, NSW, LR.100

With regard to the locomotives used on the Briggsville tramway, the enclosed photograph of *BEN BULLEN* (Hawthorn Leslie 2840/1910) may be of interest to readers. The locomotive is shown stored on wooden blocks at Lithgow in 1922, with another narrow gauge locomotive stored behind it.

The original print was given to me in the 1950s and pencilled on the back are the words "Lithgow 1922". I regret to say I have no record of the original photographer in this instance.

WJ Lane
Mt Colah, NSW



ORENSTEIN & KOPPEL LOCOMOTIVE 22665

During research into the records of the Irrigation and Reclamation Works Department in South Australia, I came across a reference to an Orenstein & Koppel locomotive which may be of interest to readers. A letter of 8 August 1921 from Horrocks Roxburgh Pty Ltd, Agency of Brookman Buildings, 62 Grenfell Street Adelaide offered a 20 hp "Koppel" locomotive in response to Departmental enquiries about a locomotive for the Loveday railway. It was offered for £650 FOB at Auckland, NZ, being a 2ft 9 in gauge Orenstein & Koppel locomotive No. 22665 with the following dimensions: 5 ft wide, 8 ft high, 11 ft long excluding buffers, wheel base 3 ft 1 in, wheels 1 ft 7 in, bore 6 in, stroke 10 in, pressure 176 lbs/sq in, firebox 16 in long, 20 in wide, 19 in high. Unfortunately, they do not say any more about it, such as who owned it previously nor where it worked.

David Mack
Somerton, SA

BERGER PAINTS, RHODES NSW

In 1930 Lewis Berger & Sons (Australia) Limited published a small book to commemorate the 170 years trading of the *House of Berger*. This book contains an item of interest concerning light railways.

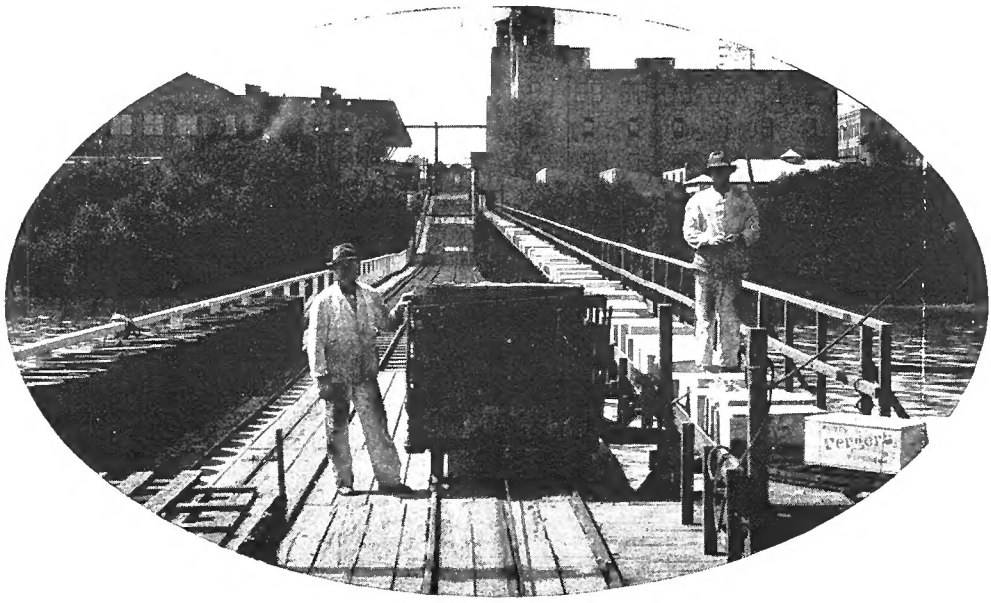
Lewis Berger established a small factory in London at Shadwell on the northern bank of the Thames in 1760, not far from where the *Endeavour* was being prepared for the voyages of Captain James Cook. The firm grew and expanded its operations overseas, and in 1911 a separate company was formed in Sydney to service the market in the Southern Pacific Region.

In 1916 the Company acquired 15 acres of land at Rhodes (10 miles by rail from Sydney) and built a factory to manufacture white lead, paints, varnishes, enamels and lacquers. The site was served by road, rail siding and a jetty on the Parramatta River.

The last page of the book shows a photograph of the works; and an insert shows details of the jetty, which was served by a double tracked tramway of about 3 foot gauge. The trucks were rope hauled, and rollers are visible set into the planking of the jetty. The tramway appears to have been used to transport large drums of chemicals up to the works, with the finished product being delivered to the end of the jetty by gravity conveyor.

Perhaps a reader may be able to provide further details on this jetty tramway.

Peter Evans
Kew, Vic



ADELAIDE TIMBER COMPANY TRAMWAYS: LR.95

Further to Lindsay Watson's article 'Notes on the Adelaide Timber Company Ltd', I would like to add some additional information. The subway which was constructed under the WAGR line at Wilga is shown on a WAGR CCE drawing in the Battye Library, Perth. It was completed on 29 October 1927, and was used until 1945. It was filled-in in February 1956.

The Ransomes, Sims & Jefferies steam traction engine used at Wilga, known as *SNORTING LIZ*, is now preserved at the Manjimup Timber Park. A check on the driving wheel diameter revealed it to be 4 ft 9 in. This, and lettering stamped on the rim — VICKERS AUSTRALIA WAR 1897 — prove that it was from a WAGR R-class locomotive. The smaller front wheels (3 ft dia.) are more of a mystery, presuming they came from a WAGR source. The only identifying marks are 'ASHBURY', cast in 1½ in. high letters on a spoke and '9.84' stamped on the tyre. The only common use of 3 ft diameter wheels in WAGR at that time was on locomotive tenders.

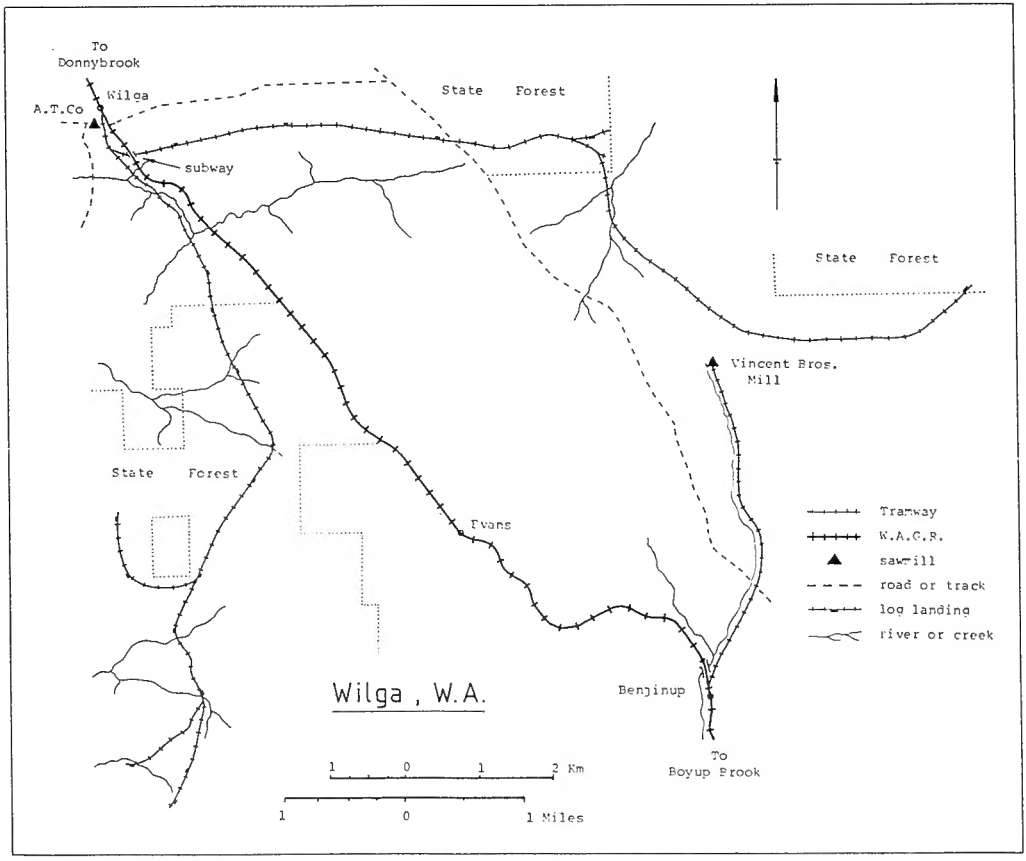
I am also forwarding plans of the Wilga and East Witchcliffe bush lines operated by the Adelaide Timber Coy. The Forests Department Tramway Permit for the eastern end of the Wilga lines was issued on 1 August 1935.

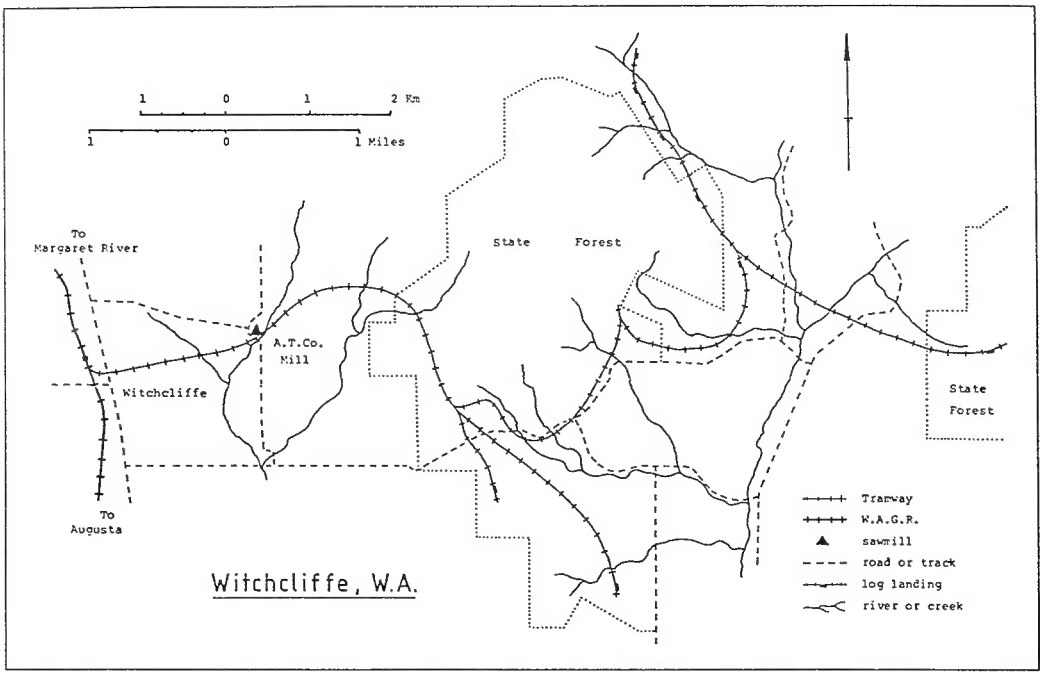
I have shown on the Wilga plan, the 3 mile long tramway from Benjinup to the Vincent Bros mill. In *LR.65* (p.23), a reference is made to *YARLOOP* (Baldwin 8130/1886) working for Vincent Bros on the Boyup Brook-Kojonup construction. As the boiler files were missing from February 1905 to April 1912 for this locomotive, I believe that some of that time was spent operating this mill tramway. Vincent Bros first constructed the railway from Noggerupp to Boyup (24 miles) in 1908-09, and built a steel-railed tramway up to their mill during this period. A local farmer remembered it was initially worked by horses, but later by a 'small steam locomotive'.

The supply of sleepers from this mill continued until completion of the Kojonup railway early in 1912. The WAGR Weekly Notice in March 1912 recorded the removal of Vincent Bros bush line at Benjinup. YARLOOP had by then been sent to Perth.

Jeff Austin
Forrestfield, WA

Adelaide Timber Company formation north-east of Benjinup, March 1981. Jeff Austin


To
Donnybrook
Wilga
A.T.Co
State Forest
subway
State Forest
Vincent Bros.
Mill
State Forest
Evans
Tramway
W.A.G.R.
sawmill
road or track
log landing
river or creek
Wilga , W.A.
Benjinup
To
Boyup Brook
1 0 1 2 Km
1 0 1 Miles


1 0 1 2 Km
1 0 1 Miles
To
Margaret River
State Forest
A.T.Co.
Mill
Witchcliffe
State
Forest
To
Augusta
Tramway
W.A.G.R.
sawmill
road or track
log landing
river or creek
Witchcliffe, W.A.